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An IoT Testbed for the Software Defined City Vision: The #SmartMe Project

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Abstract

© 2016 IEEE.To kickstart the process of morphing Messina into a «smart» city, an explicit mission for the crowdfunded #SmartME project, it is essential to set up an infrastructure of smart devices embedding sensors and actuators, to be scattered all over the urban area. An horizontal framework coupled with the Fog computing approach, by moving logic toward the «extreme» edge of the Internet where data needs to be quickly elaborated, decisions made, and actions performed, is a suitable solution for data- intensive services with time-bound constraints as those usually required by citizens. This is especially true in the context of IoT and Smart City where thousands of smart objects, vehicles, mobiles, people interact to provide innovative services. We thus designed Stack4Things as an OpenStack-based framework spanning the Infrastructure-as-a-Service and Platform-as-a-Service layers. We present some of the core Stack4Things functionalities implementing a Fog computing approach towards a run- time «rewireable» Smart City paradigm, by outlining node management and contextualization mechanisms, also describing its usage in terms of already supported and developed verticals, as well as a specific example related to environmental data collection through #SmartME.

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Keywords

#SmartME, Arduino, Cloud, IaaS, IoT, OpenStack, Smart City, Stack4Things